

DEFECT REDUCTION IN ELECTRODEPOSITED
COPPER FOR SEMICONDUCTOR APPLICATIONS

5 A method for electroplating a copper deposit onto a semiconductor integrated circuit device substrate having submicron-sized features, and a concentrate for forming a corresponding electroplating bath. A substrate is immersed into an electroplating bath formed from the concentrate including ionic copper and an effective amount of a defect reducing agent, and electroplating the copper deposit from the bath onto the substrate to fill the submicron-sized reliefs. The occurrence of protrusion defects from superfilling, surface roughness, and voiding due to uneven growth are reduced, and macro-scale planarity across the wafer is improved.